CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1-34 (Canceled)

35.(Previously Presented)   A computer-implemented method, comprising:

receiving at the computer a first schema database;

forming a virtual schema based upon a reverse star schema, the virtual schema including at least a portion of a dataset included in the database; and

performing data analysis in accordance with the virtual schema.

36.(Previously Presented)   A computer-implemented method, comprising:

receiving at the computer a first schema database;

forming a virtual schema based upon a reverse star schema, the virtual schema including at least a portion of a dataset included in the database; and

providing customer centric information to a core of customer data in the database in accordance with the virtual schema.

37.(Previously Presented)   A computer-implemented method, comprising:

receiving at the computer a first schema database;

forming a virtual schema based upon a reverse star schema, the virtual schema including at least a portion of a dataset included in the database; and

generating code in accordance with the virtual schema.

38.(Previously Presented)   The method of claim 35, wherein forming a virtual schema including at least a portion of a dataset included in the database comprises:

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forming a meta model describing relationships between different entities or groups of entities in the data.

39. (Previously Presented)   The method of claim 38, wherein forming a meta model describing relationships between different entities or groups of entities in the data comprises:

forming a meta model that describes a reverse star schema relationship between different entities in the data.

40. (Original)   The method of claim 35, further comprising:

creating a report based upon the data analysis.

41. (Previously Presented)   A data warehouse builder apparatus, the apparatus comprising:

a schema builder that generates one or more virtual schemas based upon a reverse star schema, the virtual schemas including at least a portion of data input from a source, and generates mapping rules controlling data movement into a data warehouse;

a metadata repository operative to hold the virtual schemas and mapping rules; and

a code generator that generates one or more analysis functions,

wherein the data warehouse is defined by at least a portion of the data input, the virtual schemas, the mapping rules, and the analysis functions.

42. (Original)   The apparatus of claim 41, wherein

the mapping rules govern at least one of consolidating, transforming and formatting the data into the data warehouse.

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43. (Original)   The apparatus of claim 41, wherein

the data analysis functions comprise at least one of:

static meta data aware customer analysis functions, and

dynamically generated customer data analysis functions.

44. (Original)   The apparatus of claim 43, wherein

the meta data aware customer analysis functions are built in functions.

45. (Original)   The apparatus of claim 41, wherein

the metadata repository is operative to hold meta data, and

the meta data comprises at least one of:

a data schema,

a star schema,

a virtual schema,

a reverse star schema,

source data processing rules,

source data movement rules,

source data loading rules,

job schedules for loading or maintaining data flow in the data warehouse, and

user provided parameters controlling code generation of data analysis functions.

46. (Original)   The apparatus of claim 45, wherein

the meta data is embedded in code generated by the data warehouse builder.

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47. (Original) The apparatus of claim 41, wherein

the data warehouse provides information to one or more data analysis

applications comprising a front end to the data analysis functions.

48. (Original) The apparatus of claim 47, wherein

the data analysis applications comprise at least one of:

electronic applications,

sales force automation applications,

customer service applications, and

marketing automation applications.

49. (Original) The apparatus of claim 47, wherein

the data analysis applications comprise customer data analysis applications,

the customer data analysis applications include at least one of:

decision support analysis relating business decisions to customer behavior,

summarizing techniques,

applications that analyze data based upon customer identity, and

applications that correlate at least one of:

      customer activities,

      events,

      transactions, and

      status to a customer identity.

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50. (Original)   A system, comprising:

a data warehouse;

a data warehouse builder;

customer data analysis functions; and

customer data analysis applications; wherein

the data warehouse is defined by the data warehouse builder based upon a

reverse star schema.

51. (Original)   The system of claim 50, wherein

the customer data analysis functions comprise:

static meta data aware customer analysis functions; and

dynamically generated customer data analysis functions.

52. (Previously Presented)   An apparatus, comprising:

means for generating one or more virtual schemas based upon a reverse star

schema including at least a portion of data input from a source;

means for generating mapping rules controlling data movement into a data

warehouse;

means for holding the virtual schemas and mapping rules; and

means for generating one or more analysis functions based upon the virtual

schemas and data input.

53.(Previously Presented)   A computer readable storage device-bearing

instructions for storing thereon data in accordance with a data model, the data model

comprising:

a focal group, comprising:

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at least one of a plurality of core components; and

at least one of a plurality of classification components providing

classifications for information relating to the core components; and

at least one customized group, comprising:

at least one of a plurality of customer activity components related to the

core component; and

at least one of a plurality of activity lookup components related to at least

one of the customer activity components;

wherein the focal group and the customized group comprise a reverse star

schema meta model.

54. (Original)   The computer readable storage device of claim 53, wherein

the focal group comprises components, including components that describe at

least one of:

customer characteristics,

profiles,

business related classifications,

customer's roles, and

definitions,

wherein the components are in different business functional areas.

55. (Original)   The computer readable storage device of claim 53, wherein

the core components further comprises at least one of:

customer entity, and

related customer identity information.

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56. (Original) The computer readable storage device of claim 55, wherein the customer identity information further comprises at least one of:

an account identifier,

social security number, and

encrypted name.

57. (Original) The computer readable storage device of claim 53, wherein the classification components relate to at least one of:

a business, and

a customer.

58. (Original) The computer readable storage device of claim 57, wherein the classification components further comprise at least one of:

business profile,

demographics,

current profile,

region,

channel, and

sales organization.

59. (Original) The computer readable storage device of claim 58, wherein a relationship exists between at least one of the classification components and a customer entity within the core components.

60. (Original) The computer readable storage device of claim 53, wherein

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the customized group relates to operational business transactions.

61. (Original) The computer readable storage device of claim 60, wherein

the customized group further comprise at least one of:

business measures, and

attributes,

wherein the business measures and attributes describe event transactions.

62. (Original) The computer readable storage device of claim 61, wherein

the event transactions further comprise at least one of:

independent events, and

dependent events.

63. (Original) The computer readable storage device of claim 62, wherein

a sequence comprising two or more event transactions is used to describer

various stages of customer activity.

64. (Original) The computer readable storage device of claim 63, wherein

the sequence of event transactions comprises two or more of:

subscription,

payment,

promotion,

price plan change,

service call, and

cancellation.

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65. (Original) The computer readable storage device of claim 53, wherein the customer activity components relate to at least one of:

event transactions, and

measures,

wherein the event transactions and measures relate to customer activities.

66. (Original) The computer readable storage device of claim 53, wherein the customer activity components further comprise:

at least one of a plurality of attributes.

67. (Original) The computer readable storage device of claim 66, wherein the at least one of a plurality of attributes includes a selection from among a list of built-in attributes.

68. (Original) The computer readable storage device of claim 67, wherein the at least one of a plurality of attributes further comprises:

user-defined attributes.

69. (Original) The computer readable storage device of claim 68, wherein the at least one of a plurality activity lookup components comprises:

detail characteristics of customer event transactions.

70. (Original) The computer readable storage device of claim 68, wherein the at least one of a plurality activity lookup components comprises:

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a products entity.

71. (Original) The computer readable storage device of claim 53, wherein

the at least one of a plurality of core components comprises:

a customer entity, and

at least one of a plurality of account entities,

wherein the customer entity and the account entities provide account

level concepts to queries relating to customers.

72.(Previously Presented)   A computer-implemented method for creating a

customer centric data warehouse, the method comprising:

providing at the computer a template schema having a reverse star schema

configuration;

receiving a first input of characteristics;

applying the first input of characteristics to the template schema to produce a

logical schema;

receiving a second input of characteristics;

applying the second input of characteristics to the logical schema to produce a

physical schema; and

moving data to create the customer centric data warehouse in accordance with

the physical schema.

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73. (Original) The method of claim 72, wherein:

applying the first input of characteristics to the template schema to produce a logical schema, comprises:

selecting a business model to filter out unnecessary entities;

selecting business entities related to customers in a focal group of the template schema; and

selecting and defining customer transactions and/or event entities and attributes in a customized group of the template schema.

74. (Original) The method of claim 73, wherein:

applying the first input of characteristics to the template schema to produce a logical schema, further comprises:

selecting source data tables and/or attributes.

75. (Original) The method of claim 72, wherein:

applying the second input of characteristics to the logical schema to produce a physical schema, comprises:

defining customer event types in customer activity components; and

determining data types and primary and/or foreign keys.

76. (Original) The method of claim 75, wherein:

applying the first input of characteristics to the template schema to produce a logical schema, further comprises:

determining data types based upon source data.

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77. (Original) The method of claim 72, wherein:

moving data to create the customer centric data warehouse in accordance with the physical schema, further comprises:

providing meta data comprising mapping rules that describe how data from external sources is mapped to data table and attributes in the data warehouse.

78. (Original) The method of claim 77, wherein:

the mapping rules further comprise a plurality of transformation rules.

79.(Previously Presented)   A computer-implemented method, comprising:

selecting at the computer a business model template;

selecting customer entities from a plurality of defined customer entities in a focal group of a reverse star schema meta model;

defining customer transactions and event entities and attributes;

defining customer activity components in customer activity components;

selecting source data and attributes;

determining data types based on source data;

determining data types and a primary key or a foreign key;

creating a database; and

creating data movement mapping rules.

80.(Original) The method of claim 79, wherein:

selecting customer entities from a plurality of defined customer entities in a focal group comprises selecting the customer entities based upon fit to a need determinable from one or more business processes.

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81. (Original) The method of claim 79, wherein:

selecting source data tables and attributes comprises selecting the attributes

from at least one of a list of pre-defined attributes and user defined attributes.

82. (Original) The method of claim 79, wherein:

selecting source data tables and attributes comprises accessing information

about entities in customer activity components through a plurality of definable activity lookup

components.

83. (Original) The method of claim 82, wherein:

the entities in customer activity components comprises business transactions,

and

the information comprises at least one of products, stores, purchasers, and

payment paradigms.

84. (Original) The method of claim 79, wherein:

defining customer activity components comprises using transaction types as

domain constraints when the data warehouse is created.

85. (Original) The method of claim 79, wherein:

defining customer activity components comprises using event transaction types

as attribute values for customer event correlation queries in customer data analysis.

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86. (Original) The method of claim 79, wherein:

selecting source data and attributes comprises providing user browsing through a data model to select data tables and attributes to comprise a source of data tables and attributes of a data warehouse.

87. (Original) The method of claim 79, wherein:

determining data types based on source data comprises providing automated derivation of data types.

88. (Original) The method of claim 87, wherein:

determining data types based on source data comprises providing user capability to change the data types provided by the automated derivation of data types.

89. (Original) The method of claim 79, wherein:

determining data types and primary/foreign keys using a database design tool, ERWin.

90. (Original) The method of claim 79, wherein:

creating a database comprises using a data warehouse builder to construct a data warehouse based upon database configuration information provided by a user.

91. (Original) The method of claim 79, wherein:

creating data movement mapping rules comprises using a database design tool, EXTRACT.

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92.(Previously Presented)   A computer-implemented method for providing a user interface, the method comprising:

providing at the computer a hierarchical display of functional components;

highlighting a first component of a reverse star schema in the hierarchical display, indicating a component to be defined; and

receiving input indicating information to be incorporated into the component to be defined.

93. (Original) The method of claim 92, further comprising:

displaying a business model dialog whenever a reverse star schema component is highlighted and selected, wherein

the business model dialog comprises:

a business model field; and

a business characteristics field.

94. (Original) The method of claim 93, further comprising:

displaying a database creation dialog whenever information is entered into the business model dialog, wherein

the database creation dialog comprises:

a database name field;

a database files field; and

a file properties area.

95. (Original) The method of claim 94, further comprising:

displaying a transaction log whenever a transaction log tab is selected, wherein

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the transaction log comprises:

a database files field; and

a file properties area.

96. (Original)   The method of claim 95, further comprising:

displaying a reverse star schema customization dialog whenever information is

entered into the database creation dialog, wherein

the reverse star schema customization dialog comprises:

a display of a focal group;

a display of at least one of a plurality of tables related to the focal group; and

a mechanism for receiving inputs of information to perform at least one of create,

edit, plan layout, identify sources of data and specify data transformations for the tables.

97.(Previously Presented)   A computer-based computer program product,

comprising:

code for accessing meta data from a repository;

code for translating information entities from a reverse star schema meta model

into a data schema to form a database;

code for providing customer activity correlation queries with access to a database

of a data warehouse;

code for providing customer data analysis functions;

code for providing analysis results to at least one of a plurality of business

applications; and

a computer readable storage medium for holding the codes.

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98. (Original)   The computer program product of claim 97, wherein

the code for providing customer data analysis functions comprises:

code that provides at least one of a market basket analysis and customer

valuation analysis.

99.(Previously Presented)   A computer-based computer program product,

comprising:

code for providing a user interface;

code for generating customer data analysis function code;

code for scheduling tasks for managing a data warehouse;

code for pre-processing data for movement into the data warehouse;

code for managing creation of the data warehouse according to a reverse star

schema meta model;

code for defining customer data analysis functions;

code for performing data source analysis;

code for planning operations of a customer data analysis environment; and

a computer readable storage medium for holding the codes.

100. (Original) The computer program product of claim 99, wherein

customer data analysis function code is generated from stored meta data.

101. (Original) The computer program product of claim 99, wherein

customer data analysis function code is generated based upon built in function

code templates.

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102.(Previously Presented)   A customer data analysis report produced according to the method of claim 99.

103.(Previously Presented)   A computer-implemented method, comprising:

providing at the computer a focal group, comprising:

at least one of a plurality of core components; and

at least one of a plurality of classification components providing

classifications for information relating to the core components; and

providing at the computer at least one customized group, comprising:

at least one of a plurality of customer activity components related to the

core component; and

at least one of a plurality of activity lookup components related to at least

one of the customer activity components;

wherein the focal group and the customized group comprise a reverse star schema meta model.

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